U.S.S.N. 09/588,788

Remarks

Thorough examination by the Examiner is noted and appreciated.

The claims have been amended to overcome Examiners 112 rejection and to further clarify Applicants invention.

No new matter has been added.

For example support for the amendments and new claims are found in the previously presented claims and the Specification (see e.g., Figure 1 and page 15, line 21 in example 1).

Claim Rejections under 35 USC 103

1. Claims 1, 4, 6, 8, and 16-18 stand rejected under 35 USC 103(a) as being unpatentable over Haas (4,016,519) in view of Imai (US 5,8343,825).

Haas et al. teach forming a printed circuit coil **on one or both sides of a plate of insulating material with a ferromagnetic core mounted in a hole at the center of the coil** (i.e., a

magnetic transducer or magnetic core inductor) (see Abstract; (col 1, lines 1-15; col 2 lines 31-37). **Contacts** (2, Figure 1) **are also located at the center of the coil** (see col 2, lines 34-37). Haas et al. further teach that forming **an inductive coil as an integrated circuit structure is impractical** (col 1, lines 1-15), thus **<u>Haas teaches away from forming an integrated circuit structure</u>**.

Haas et al. teach increasing the path width of the spiral conductor from the inside of the coil to the outside of the coil with a constant spacing between the turns of the coil (see col 2, lines 38-43). Haas et al. teach oval, circular or pear shapes (col 2, lines 23-25).

On the other hand, Imai discloses a spiral inductor formed over an insulating layer on a semiconductor substrate as part of an integrated circuit (see Abstract; col 1, lines 14-24). The spiral inductor of Imai has constant width spirals and spacings therebetween (see Figure 3). The spiral inductor of Imai further has a ferromagnetic particle containing material layer 12b (i.e.,, ferromagnetic particle containing insulating material) (Figures 3, 4, 5C) formed over the conductor coil and between conductor lines of the coil (inserted between turning portions of the coil) (see Abstract; col 4, lines 1-4; lines 15-19; lines 54-

58). Alternatively, a lower insulating layer ((31; Figure 6) can be formed between the conductor spiral prior and ferromagnetic particle containing material layer 12b (col 6, lines 48-67) where the amount of ferromagnetic material between the turns is regulable by changing the thickness of the lower insulating layer 31 **to regulate the inductance of the coil.**

Thus, the printed circuit ferromagnetic core inductor of Haas, where the <u>ferromagnetic core is placed in a hole at the center of the coil of Haas</u>, works by a **different principle of operation** than the integrated circuit inductor coil of Imai where **the ferromagnetic material is between the turns of the coil.**

Examiner attempts to rely on the teachings of Imai to show that it is known to manufacture planar inductors by forming a substrate with a dielectric layer over a semiconductor substrate.

However, such a fact does not help Examiner in producing Applicants invention. Neither Imai nor Haas disclose or suggest that that the printed circuit ferromagnetic core inductor of Haas could be successfully formed on a dielectric layer over a semiconductor substrate (including forming a hole at the center of the coil for mounting a ferromagnetic core). Rather, Haas teaches that the use of integrated circuit techniques is

impractical to produce the structure of Haas, and therefore Haas **teaches away** from forming the structure of Haas by integrated circuit techniques (including over a dielectric layer on a semiconductor substrate).

Moreover, Imai nowhere discloses **mounting a ferromagnetic core in a hole at the center of the coil in a dielectric layer,** but teaches a **layer of ferromagnetic material between turns of the coil**, thus requiring any modification of Haas with the teachings of Imai to require the structure of a **magnetic layer of material between turns**, thus **changing the principle of operation** of the printed circuit printed circuit ferromagnetic core inductor of Haas, and making it **unsuitable for its intended purpose** and operation (ferromagnetic core inductor).

Thus, there is **no suggestion or expectation of success** that the **printed circuit printed circuit ferromagnetic core inductor** of Haas could be mounted in a hole in a dielectric layer over a semiconductor substrate, and further, modification of Haas with the teachings of Imai would require changing the **principle of operation** of the printed circuit ferromagnetic core inductor of Haas (by making to a different type of inductor than a ferromagnetic core inductor) and make it unsatisfactory for its intended purpose and operation (having a ferromagnetic core

mounted at the center of the coil). Thus, there is no teaching or legitimate motivation to modify Haas with the teachings of Imai in an effort to achieve Applicants invention, practically, **and as matter of law.**

In addition, even if such modification were possible or permissible as a matter of law, **such modification does not produce Applicants invention** including:

"wherein said center of said spiral defined by said first loop **surrounds a planar surface of said dielectric layer to define an inner cavity, said bottom of said inner cavity consisting of said planar surface of said dielectric layer.**"

Examiner argues that "the inner cavity of Haas can be read as a cavity formed by the planar surface (top surface of 3) of the dielectric layer and the first loop, or alternatively, can be read as hole (e.g., 4) which is defined by the first loop that surround the planar surface of the dielectric layer"

Examiner is clearly mistaken. Haas nowhere discloses or shows that the hole (cavity) **is defined by** the by the first loop that surrounds the planar surface of the dielectric layer. Rather Haas discloses that the hole is made in the **insulating**

material with a **ferromagnetic core mounted in a hole at the center of the coil** and that the first loop **surrounds a ferromagnetic core mounted in a hole.**

To further clearly define the plain meaning of their claims and the structure of their invention and to clearly define over Haas, Applicants have now amended their claims to unambiguously define over the structure of Haas:

> wherein said **center of said spiral defined by said first loop** surrounds a planar surface of said dielectric layer **to define an inner cavity, said bottom of said inner cavity consisting of said planar surface of said dielectric layer.**

Thus, the plain meaning of Applicants claims language and structure **excludes** the structure of Haas including a "**ferromagnetic core mounted in a hole at the center of the coil**".

See e.g., MPEP 2111.01:

> During examination, the claims must be interpreted as broadly as their terms reasonably allow. **This means that the words of the claim must be given their plain meaning** unless applicant has provided a clear definition in the specification. *In re Zletz*, 893 F.2d 319, 321, 13 USPQ2d 1320, 1322 (Fed. Cir. 1989).
>
> When not defined by applicant in the specification, **the words of a claim must be given their plain meaning. In other words, they must be read as they would**

> **be interpreted by those of ordinary skill in the art.** *In re Sneed,* 710 F.2d 1544, 218 USPQ 385 (Fed. Cir. 1983).

"**First**, there must be some **suggestion or motivation**, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings. **Second**, there must be a **reasonable expectation of success**. **Finally**, the prior art reference (or references when combined) **must teach or suggest all the claim limitations**. The teaching or suggestion to make the claimed combination and the reasonable expectation of success must both be found in the prior art, and not based on applicant's disclosure." *In re Vaeck, 947 F.2d 488, 20 USPQ2d 1438 (Fed. Cir. 1991).*

"A *prima facie* case of obviousness may also be rebutted by showing that the art, **in any material respect**, **teaches away from the claimed invention**." *In re Geisler*, 116 F.3d 1465, 1471, 43 USPQ2d 1362, 1366 (Fed. Cir. 1997).

"If the proposed modification or combination of the prior art would **change the principle of operation** of the prior art invention being modified, then the teachings of the references are not sufficient to render the claims prima facie obvious." *In*

re Ratti, 270 F.2d 810, 123, USPQ 349 (CCPA 1959).

"If proposed modification would render the prior art invention being modified **unsatisfactory for its intended purpose**, then there is no suggestion or motivation to make the proposed modification." *In re Gordon, 733 F.2d 900, 221 USPQ 1125 (Fed. Cir. 1984).*

It is further noted that Examiners stated motivation for modifying the structure of Haas to form it as an integrated circuit structure on a dielectric layer:

1) to provide support for the planar spiral conductor layer

2) to provide a degree of electrical isolation between the inductor and the planar spiral conductor layer; and

3) to allow accurate fine patterning of the planar spiral conductor layer;

are already provided by the **printed circuit printed circuit ferromagnetic core inductor** Haas, and further Examiner has neglected to explain how the ferromagnetic core could be mounted in a dielectric layer over a semiconductor substrate, and which nevertheless, does not produce Applicants inner cavity.

It is further noted that even assuming that Examiners

statement of **official notice** that forming a planar spiral conductor layer with a non-magnetic material is conventional, old, and notoriously well known, is known, such a fact is irrelevant, since such modification of the ferromagnetic core inductor of Haas would likely make the device of Haas inoperable, and nevertheless **does not produce Applicants structure**. It is further noted that Wollnik **does not** disclose **a planar spiral inductor)**, but discloses **coil arrangement for correction of magnetic fields emanating from the pole shoes of a magnet** (see col 1, lines 1-14; claim 1) where a copper laminated material is used to form conductor strips of the coil according to lines of magnetic flux emanating from the magnet to be corrected (see claim 1).

Thus, even assuming *arguendo* that Haas could be successfully modified with the teachings of Imai in forming a coil inductor on a dielectric layer as an integrated circuit (and ignoring the fact that **Haas teaches away** from such a structure **as impractical for their ferromagnetic core inductor**, such modification still does not produce Applicants invention including those elements in **bold type**:

With respect to claim 1:

"A method for fabricating an integrated circuit planar

inductor with an enhanced Q value comprising:

providing a substrate comprising a dielectric layer over a semiconductor substrate;

forming over the substrate a planar spiral conductor layer comprising a single spiral to form **a planar spiral inductor,** wherein a successive series of loops within the planar spiral conductor layer is formed with a progressive and discontinuous variation, said variation progressing from a center of said spiral defined by a first loop to a periphery of said series of loops at least one of:

a series of progressive stepwise changes in linewidths to form a series of discrete linewidths for the successive series of loops; and

a series of progressive stepwise changes in spacings separating the successive series of loops;

wherein said center of said spiral defined by said first loop surrounds a planar surface of said dielectric layer to define an inner cavity, said bottom of said inner cavity surrounded by said first loop consisting of said planar surface of said dielectric layer."

With respect to claim 4:

"A method for fabricating an integrated circuit planar inductor with an enhanced Q value comprising:

providing a substrate comprising a dielectric layer over a semiconductor substrate;

forming on the substrate a planar spiral conductor layer to form a planar spiral inductor, wherein a successive series of loops within the planar spiral conductor layer is formed with a progressive and discontinuous variation, said variation progressing in any direction from a center of said spiral defined by a first loop to a periphery of said series of loops, said variation comprising at least one of:

a series of **progressive stepwise changes in linewidths** to form a series of discrete linewidths for the successive series of loops; and

a **series of progressive stepwise changes in spacings** separating the successive series of loops;

wherein the successive series of loops is formed in a shape selected from the group consisting of a **triangle, a square, a rectangle, a higher order polygon**, a uniform ellipse and a

circle, **wherein said center of said spiral defined by said first loop surrounds a planar surface of said dielectric layer to define an inner cavity**, said bottom of said inner cavity surrounded by said first loop consisting of said planar surface of said dielectric layer."

"**First**, there must be some **suggestion or motivation**, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings. **Second**, there must be a **reasonable expectation of success**. **Finally**, the prior art reference (or references when combined) **must teach or suggest all the claim limitations**. The teaching or suggestion to make the claimed combination and the reasonable expectation of success must both be found in the prior art, and not based on applicant's disclosure." *In re Vaeck, 947 F.2d 488, 20 USPQ2d 1438 (Fed. Cir. 1991)*.

2. Claim 7 stands rejected under 35 USC 103(a) as being unpatentable over Haas in view of Imai, above, and further in view of Murphy (5,844,451) and Esper et al. (US 4,613,843).

Applicants reiterate the comments made above with respect to

Even assuming *arguendo* a proper motivation for combination, the fact that Murphy teaches **linewidths** for a novel integrated circuit element that exhibits the characteristics of a **series capacitor-inductor network** where at least **two coils having constant width and spacing** are formed **stacked on one another and with a dielectric between them**, does not further help Examiner in producing Applicants invention.

Moreover, any attempt to modify the **printed circuit magnetic transducer of Haas** with the integrated circuit **series capacitor-inductor network of** Murphy would **change the principle** of operation of the device of Haas (turn a ferromagnetic core inductor (magnetic transducer) into an series capacitor-inductor), and make it unsuitable for its intended purpose. Moreover, it is unlikely that one could expect to successfully modify the **printed circuit magnetic transducer of Haas** with the integrated circuit **series capacitor-inductor network of** Murphy **since the manufacturing processes and materials for a printed circuit and an integrated circuit are recognized as incompatible or impractical** as taught by Haas.

Even assuming *arguendo* a proper motivation for combination,

the fact that Esper teaches linewidths for a thin film coil on ceramic substrate (planar magnetic transducer) with a powerful magnet positioned on the other side of the ceramic substrate to sense magnetic filed disturbances (see Abstract; col 2, lines 60-65), does not further help Examiner in producing Applicants invention.

"**First**, there must be some **suggestion or motivation**, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings. **Second**, there must be a **reasonable expectation of success**. **Finally**, the prior art reference (or references when combined) **must teach or suggest all the claim limitations**. The teaching or suggestion to make the claimed combination and the reasonable expectation of success must both be found in the prior art, and not based on applicant's disclosure." *In re Vaeck, 947 F.2d 488, 20 USPQ2d 1438 (Fed. Cir. 1991)*.

3. Claim 24 stands rejected under 35 USC 103(a) as being unpatentable over Haas in view of Imai, above, and further in view of Romankiw et al.(US 4295,173) and Esper (4,613,843).

Applicants reiterate the comments made above with respect to

Romankiw et al. disclose a thin film **inductive transducer** head including conductive coils (see Abstract). Romankiw et al. overcome problems in the prior art by providing a pole tip region of preselected constant relatively **narrow width having two magnetic layers** (i.e. thickness) (items 14 and 15; Figure 1A) that extend in a direction normal to the magnetic medium being read (item M) to improve reading of the magnetic medium (see col 1, lines 57-66; col 3, lines 22-38). Romankiw et al. disclose that the width of **magnetic yoke layers 14 and 15** (Figure 1A) **underlying and overlying the interlocking spirals** (coils), should progressively increase in cross sectional area in steps (30) from point Y (see item Y, Figure 1A and item Y and layer 15 in Figure 1C).

The thin film **transducer head** of Romankiw et al. is formed of **two electrically separate interlocking spirals** (see Figure 1B (beginning at 10h, 10g), each **forming a four turn winding** to achieve a more balanced electrical center tap than would a single eight-turn spiral (col 2, lines 30-35).

Thus, there is no motivation for modifying Haas with the teachings of Romankiw et al., by selectively extracting the fact

that Romankiw et al. teaches rectangular spirals comprising **two electrically separate rectangular interlocking spirals (completely different structure operating by a different principle of operation).** There is no suggestion in either Haas or Romankiw that the printed circuit ferromagnetic core inductor of Haas could be formed with a rectangular shape or with **two electrically separate rectangular interlocking spirals.**

Thus, even assuming such modification of Haas with the two electrically separate rectangular interlocking spirals of Romankiw et al., such modification does not produce Applicants invention.

Examiners statement that forming a planar spiral conductor layer in the shape of a rectangle is well known and the citation of Romankiw and Esper, who teach completely different inductor coils (not planar spiral inductors as Applicants claim) and that operate by a different principle of operation does not help Examiner in producing Applicants invention.

Applicants note that the structure and functions of the printed circuit ferromagnetic core inductor of Haas, the thin film **transducer head** of Romankiw et al. formed of **two electrically separate interlocking spirals**, and the thin film

coil on ceramic substrate (**planar magnetic transducer**) of Esper with a powerful magnet positioned on the other side of the ceramic substrate to sense magnetic field disturbances, are unrelated in to one another in structure and principle of operation other than the fact that they all include coiled structures with the formation or interaction with a magnetic field.

Even assuming that Examiner could show individual aspects of Applicants **method** or **method of forming the structure** of Applicants were known does not help Examiner in establishing a prima facie case of obviousness.

"The fact that references relied upon teach that all aspects of the claimed invention **were individually known in the art** is not sufficient to establish a prima facie case of obviousness without some objective reason to combine the teachings of the references." *Ex parte Levengood, 28 USPQ2d 1300 (Bd. Pat. App. & Inter. 1993).*

"**First,** there must be some **suggestion or motivation,** either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings. **Second,** there must

be a **reasonable expectation of success. Finally,** the prior art reference (or references when combined) **must teach or suggest all the claim limitations.** The teaching or suggestion to make the claimed combination and the reasonable expectation of success must both be found in the prior art, and not based on applicant's disclosure." *In re Vaeck, 947 F.2d 488, 20 USPQ2d 1438 (Fed. Cir. 1991).*

4. Claims 19 through 23 stand rejected under 35 USC 103(a) as being unpatentable over the combination of Haas, Church (US 4, 219,584), Imai (5,834,825) and Wolnick (4,187,485).

Applicants reiterate the comments made above with respect to Haas, Imai, and Wolnick.

Church et al. disclose a **single spiral planar conductor** coil having an **elliptical pattern** where the coil turn portions (item 20, Figures 1 and 2; col 2,lines 17-42), by virtue of the elliptical pattern, **form progressively increasing linewidths from the area of the transducing gap (16; see Figure 1) (one periphery of the ellipse) toward the area at and beyond the back gap closure (toward the opposite periphery of the ellipse (i.e. in one direction from and edge of the ellipse** (18; see Figure 1 and 2) (see col 2, lines 57-62) **(i.e., progressively across the**

entire ellipse). Church et al. teach that the elliptical configuration reduces a total length of the coil as **compared to rectangular or circular coils** and results in **less heat generation and has optimal heat dissipation** (col 2, lines 35-40). Church et al. **teach away** from rectangular shapes or shapes with corners and sharp ends (see col 2, lines 44-54).

Moreover, the **center of the coil** (see Figure 2) of Church et al. has an electrical contact 24 and a back gap closure (18) (part of the magnetic pole piece layer 14 (see Figures 1 and 2).

Thus, the thin film magnetic head of Church where an elliptical coil with progressive increase in the width of the coil **from an edge of the ellipse to an opposite edge** and where the coil **is between magnetic material layers** 12 and 14 is **completely different in structure and operation** than the printed circuit **ferromagnetic core of Haas where the coil that has** progressive increase in the width of the coil from the center of the coil to the outer edge of the coil.

However, what **Haas and Church have in common is the location of contacts at the center of the coil** (i.e., inner cavity defined by first loop of coil has both contacts and a ferromagnetic core at the bottom of the cavity (i.e., Haas).

There is clearly no legitimate motivation to combine the teachings of Haas and Church, and modification of Haas with the structure of Church would likely make the device of Haas inoperable, and still would not produce Applicants invention.

Applicants reiterate the comments made above with respect to Imai who disclose yet another completely different inductor structure (where the magnetic material is between turns of the coil). It is further noted that the inductor structures of Imai (magnetic material overlying and between turns **operates by a different principle of operation than the ferromagnetic core inductor structure of Haas** (ferromagnetic core and contacts at a center portion) and Church (electrical contact back gap closure at a center portion). It is further noted that neither Church Haas, nor Imai suggest that the structures of Haas (**printed circuit ferromagnetic core inductor)** and Church (**magnetic head assembly)** could be formed as an integrated circuit structures.

Thus, the fact that Imai disclose an integrated circuit structure does not help Examiner. There is no suggestion or expectation in any of the references that the structures of Haas (**printed circuit ferromagnetic core inductor** including a <u>**ferromagnetic core mounted in a hole at the center of the coil**</u>

and **who teaches away from integrated circuit techniques as impractical for their device - which**) or Church (**magnetic head assembly** including **coil center structure (inner cavity) such as electrical contact 24 and a back gap closure** (18) at the center of the coil **(inner cavity)**) could be successfully formed as an integrated circuit portion on a dielectric layer over a semiconductor wafer, and nevertheless such modification would **not produce Applicants invention** as in claim 19:

"forming over the substrate a planar spiral conductor layer comprising a single spiral to form a planar spiral inductor, wherein a successive series of loops within the planar spiral conductor layer is formed with a progressive and discontinuous variation, **said variation progressing in any direction from a center of said spiral defined by a first loop to a periphery of said series of loops**, said variation comprising a series of progressive **stepwise changes in spacings** separating the successive series of loops;

wherein said center of said spiral defined by said first loop surrounds a planar surface of said dielectric layer to define an inner cavity, said bottom of said inner cavity surrounded by said first loop consisting of said planar surface of said dielectric layer."

Examiner admits that Haas and Church fail to teach:

1) the substrate comprising a dielectric layer over a semiconductor substrate; and

2) that the variation comprises a series of progressive stepwise changes in spacings separating the successive series of loops.

Examiner erroneously asserts that Wollnik teach "a series of loop separated by spacing can have a **stepwise change in the variation of spacings**" and refers to Figures 6 and 7.

Applicants note that Wollnick **does not teach a spiral inductor coil**, but rather teaches a coil formed of copper laminated material (copper on a laminate) (col 3, lines 40-47) for homogenizing a magnetic filed between two pole show surfaces (see Abstract; claim 1) where the coil comprises a plurality of conductive strips on an insulating material where the **conductive strips are spaced according to lines of magnetic flux and magnetic field intensity of the magnets** (claim 1). Figure 6 shows an example of the conductive strip arrangements (coils) with electrical connects which resembles magnetic lines of flux (with multiple coils and central areas. On the opposite side of the carrier (laminate) conductive strip are positioned in the spacings between the conductive strips on the frontside (see

claim 2). Figure 6 shows a cross section (although the direction is not known) through the conductor strips showing corresponding current and current density.

Wollnik nowhere disclose a planar spiral inductor and nowhere teaches "stepwise change in the variation of spacings" as Examiner asserts and additionally does not disclose or teach **said variation progressing in any direction from a center of said spiral defined by a first loop to a periphery of said series of loops.**

Thus, even assuming *arguendo* some legitimate motivation for combining the coil arrangement of Wollnik for correcting magnetic fields with conductor spacings determined according to magnetic lines of flux from the magnetic pole shoes to be corrected, to modify the printed circuit **ferromagnetic core inductor** of Haas, such modification (in addition to making the device of Haas inoperable) **would not produce Applicants invention.**

"**First,** there must be some **suggestion or motivation,** either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings. **Second,** there must be a **reasonable expectation of success. Finally,** the prior art

reference (or references when combined) **must teach or suggest all the claim limitations.** The teaching or suggestion to make the claimed combination and the reasonable expectation of success must both be found in the prior art, and not based on applicant's disclosure." *In re Vaeck, 947 F.2d 488, 20 USPQ2d 1438 (Fed. Cir. 1991).*

Examiners Arguments

Examiner cites *In re Keller*, 642 F.2d 413, 208 USPQ 871 (CCPA 1981) (applicable to apparatus claims) in response to Applicants assertions according to the established case law that there is no motivation to combine the disparate individual aspects of structures from devices that operate by a different principle of operation and that would change the principle of operation of the device of Haas being modified.

Examiner ignores the further admonition that **the claimed combination cannot change the principle of operation of the primary reference or render the reference inoperable for its intended purpose.** See MPEP Section 2145:

III. ARGUING THAT PRIOR ART DEVICES

> **ARE NOT PHYSICALLY COMBINABLE**
> "The test for obviousness is not whether the features of a secondary reference **may be bodily incorporated into the structure of the primary reference**.... Rather, the test is what the combined teachings of those references would have suggested to those of ordinary skill in the art." ***In re Keller***, 642 F.2d 413, 425, 208 USPQ 871, 881 (CCPA 1981). See also *In re Sneed*, 710 F.2d 1544, 1550, 218 USPQ 385, 389 (Fed. Cir. 1983) ("[I]t is not necessary that the inventions of the references be physically combinable to render obvious the invention under review."); and *In re Nievelt*, 482 F.2d 965, 179 USPQ 224, 226 (CCPA 1973) ("Combining the teachings of references does not involve an ability to combine their specific structures."). **However, the claimed combination cannot change the principle of operation of the primary reference or render the reference inoperable for its intended purpose. See MPEP § 2143.01.**

Examiner also erroneously argues that "it is noted that the features upon which applicant relies (i.e., the principle of operation) are not recited in the claims)".

Applicants note that it is not the principle of operation of Applicants device that is at issue, but rather the disparate (different) principles of operation of the devices of the references that are relied on to modify the primary reference (e.g., Haas), where such modification would not only **change the principle of operation** of the printed circuit **ferromagnetic core inductor** of Haas, but additionally render it **unsuitable for its intended purpose** of operating as a printed circuit **ferromagnetic**

core inductor. Moreover, as noted above, Applicants claim language and structure clearly **excludes the structure of Haas**, where the first loop of the coil of Haas **defines an inner cavity having a ferromagnetic core mounted in a hole formed in the insulating material**.

Conclusion

The cited references, alone or in combination, do not produce or suggest Applicants disclosed and claimed invention, and therefore fail to make out a *prima facie* case of obviousness.

The Claims have been further amended to further clarify the plain meaning of their claim language to clearly define over the cited art. A favorable reconsideration of Applicants' claims is respectfully requested.

Based on the foregoing, Applicants respectfully submit that the Claims are now in condition for allowance. Such favorable action by the Examiner at an early date is respectfully solicited.

In the event that the present invention as claimed is not in condition for allowance for any reason, the Examiner is

respectfully invited to call the Applicants' representative at his Bloomfield Hills, Michigan office at (248) 540-4040 such that necessary action may be taken to place the application in a condition for allowance.

Respectfully submitted,

Tung & Associates

Randy W. Tung
Reg. No. 31,311
Telephone: (248) 540-4040